

**AMENDMENTS TO THE CLAIMS**

**Please amend the claims as follows.**

1. (Currently Amended) A computer-implemented method for determining a production plan comprising:

~~allocating~~ assigning, by a computing device, resources to different customers having prioritized customer demands by iteratively solving mathematical linear programs;

optimizing, by said computing device, each mathematical linear program according to one of a plurality of sets of prioritized customer demands wherein each set contains a plurality of prioritized customer demands;

determining, by said computing device, each iterative solution for remaining ones of said plurality of sets of prioritized customer demands using results from a previous mathematical linear program solution;

outputting, by said computing device, said production plan based on optimizing said each mathematical linear program and determining each iterative solution,

independently determining backorder costs penalties for each set of prioritized customer demands using said computing device; and

~~allocating~~ assigning, by said computing device, by each successive linear programming model, a range of said backorder costs within a priority group to which resources are currently being ~~allocated~~ assigned.

2. (Currently Amended) The method of claim 1, wherein said prioritized customer demands are hierarchical and comprises two or more levels of hierarchy.

3. (Cancelled).

4. (Previously Presented) The method of claim 1, wherein said mathematical linear programs solved in each iteration use the solution to the previous mathematical linear program as a starting solution.

5. (Currently Amended) The method of claim 1, further comprising adding constraints to said mathematical linear programs at each iteration to ensure that solutions to subsequent iterations are ~~consistent with~~ equal to previous solutions.

6. (Original) The method of claim 1, wherein said method uses a different mathematical linear program for each iteration.

7. (Currently Amended) The method of claim 1, wherein said ~~allocating~~ assigning process solves said mathematical linear programs for higher prioritized customer demands before solving for lower priorities.

8. (Currently Amended) A computer-implemented method of ~~allocating~~ assigning resources to a hierarchy of prioritized customer demands in a linear programming production planning system for determining a production plan, said method comprising:

aggregating, by said computing device, said prioritized customer demands into different priority groups;

~~allocating~~ assigning, by said computing device, said resources to customers having the

highest priority group of prioritized customer demands using a first linear programming model;

~~allocating~~ assigning, by said computing device, remaining resources to the next highest priority group of prioritized customer demands using a second linear programming model, wherein said second linear programming model uses results from said first linear programming model;

repeating said process of ~~allocating~~ assigning remaining resources, by said computing device, to the remaining groups of prioritized customer demands in order of priority, wherein each subsequent linear programming model uses results from a previous linear programming model; and

outputting, by said computing device, a production plan based said processes of ~~allocating~~ assigning resources,

wherein during said ~~allocating~~ assigning processes, each linear programming model ~~allocates~~ assigns a range of backorder costs within the priority group to which the resources are currently being ~~allocated~~ assigned.

9. (Currently Amended) The method in claim 8, wherein when repeating said process of ~~allocating~~ assigning remaining resources, said method uses a different linear programming model for each ~~iteration~~ repetition of said process of assigning remaining resources.

10. (Currently Amended) The method in claim 9, wherein each different linear programming model uses as a ~~starting point~~ an initial constraint a program solution of the previous linear programming model.

11. (Currently Amended) The method in claim 8, wherein during said ~~allocating~~ assigning processes, each linear programming model fixes variables associated with priority groups that have a lower priority than the priority group to which the resources are currently being ~~allocated~~ assigned.

12. (Cancelled).

13. (Original) The method in claim 8, further comprising dividing said priority groups into different sub-priority tiers.

14. (Previously Presented) The method in claim 13, wherein said sub-priority tiers can be processed simultaneously.

15. (Currently Amended) A computer-implemented method of ~~allocating~~ assigning resources to a hierarchy of prioritized customer demands in a linear programming production planning system for determining a production plan, said method comprising:

aggregating, by said computing device, said prioritized customer demands into different priority groups;

~~allocating~~ assigning, by said computing device, said resources to customer having the highest priority group of prioritized customer demands using a first linear programming model;

~~allocating~~ assigning, by said computing device, remaining resources to the next highest priority group of prioritized customer demands using a second linear programming model, wherein said second linear programming model uses results from said first linear programming model;

repeating said process of ~~allocating~~ assigning remaining resources, by said computing device, to the remaining groups of prioritized customer demands in order of priority using a different linear programming model for each iteration, wherein each subsequent linear programming model uses results from a previous linear programming model; and

outputting, by said computing device, a production plan based said processes of ~~allocating~~ assigning resources,

wherein during said ~~allocating~~ assigning processes, each linear programming model ~~allocates~~ assigns a range of backorder costs within the priority group to which the resources are currently being ~~allocated~~ assigned.

16. (Currently Amended) The method in claim 15, wherein each different linear programming model uses as a ~~starting point~~ an initial constraint a program solution of the previous linear programming model.

17. (Currently Amended) The method in claim 15, wherein during said ~~allocating~~ assigning processes, each linear programming model fixes variables associated with priority groups that have a lower priority than priority group to which the resources are currently being ~~allocated~~ assigned.

18. (Cancelled).

19. (Original) The method in claim 15, further comprising dividing said priority groups into different sub-priority tiers.

20. (Previously Presented) The method in claim 19, wherein said sub-priority tiers can be processed simultaneously.

21. (Currently Amended) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform a method of ~~allocating~~ assigning resources to a hierarchy of prioritized customer demands in a linear programming production planning system for determining a production plan, said method comprising:

aggregating said prioritized customer demands into different priority groups;

~~allocating~~ assigning said resources to customers having the highest priority group of prioritized customer demands using a first linear programming model;

~~allocating~~ assigning remaining resources to the next highest priority group of prioritized customer demands using a second linear programming model, wherein said second linear programming model uses results from said first linear programming model; and

repeating said process of ~~allocating~~ assigning remaining resources to the remaining groups of prioritized customer demands in order of priority, wherein each subsequent linear programming model uses results from a previous linear programming model; and

outputting, by said computing device, a production plan based said processes of ~~allocating~~ assigning resources,

wherein during said ~~allocating~~ assigning processes, each linear programming model ~~allocate~~ assigns a range of backorder costs within the priority group to which the resources are currently being ~~allocated~~ assigned.

22. (Currently Amended) The program storage device in claim 21, wherein when

repeating said process of ~~allocating~~ assigning remaining resources, said method uses a different linear programming model for each iteration.

23. (Currently Amended) The program storage device in claim 22, wherein each different linear programming model uses as ~~a starting point~~ an initial constraint a program solution of the previous linear programming model.

24. (Currently Amended) The program storage device in claim 21, wherein during said ~~allocating~~ assigning processes, each linear programming model fixes variables associated with priority groups that have a lower priority than the priority group to which the resources are currently being ~~allocated~~ assigned.

25. (Cancelled).

26. (Original) The program storage device in claim 21, wherein said method further comprises dividing said priority groups into different sub-priority tiers.

27. (Previously Presented) The program storage device in claim 26, wherein said sub-priority tiers can be processed simultaneously.